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Has received an application for a patent for a new and useful invention. The title and description of the invention are enclosed. The requirements of law have been complied with, and it has been determined that a patent on the invention shall be granted under the law.

Therefore, this

United States Patent

Grants to the person or persons having title to this patent the right to exclude others from making, using or selling the invention throughout the United States of America for the term of seventeen years from the date of this patent, subject to the payment of maintenance fees as provided by law.

Harry F. Manley, Jr.

Commissioner of Patents and Trademarks

Matthew G. Thompson
Attest



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United States Patent [19]

Shroot et al.

[11] Patent Number: 5,098,895

[45] Date of Patent: Mar. 24, 1992

[54] BENZONAPHTHALENE DERIVATIVES, A PROCESS FOR THEIR PREPARATION AND THEIR USE IN THERAPEUTIC AND COSMETIC COMPOSITIONS

[75] Inventors: Braham Shroot, Antibes; Jacques Eustache, Grasse; Jean-Michel Bernardon, Nice, all of France

[73] Assignee: Centre International de Recherches Dermatologiques (C.I.R.D.), Valbonne, France

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[22] Filed: Mar. 30, 1990

Related U.S. Application Data

[62] Division of Ser. No. 120,958, Nov. 16, 1987, Pat. No. 4,940,696, which is a division of Ser. No. 850,145, Apr. 10, 1986, Pat. No. 4,717,720.

Foreign Application Priority Data

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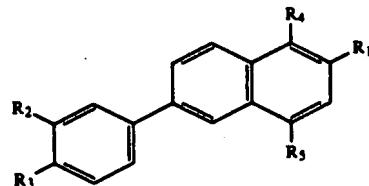
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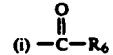
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[57] ABSTRACT
A benzonaphthalene compound has the formula



(1)

wherein R₁ represents



or (ii) —CH₂OH; R₆ represents



or OR₇; wherein R₇ represents hydrogen, alkyl having 1-20 carbon atoms, monohydroxyalkyl or polyhydroxyalkyl, r' or r'' represent hydrogen, lower alkyl, mono or polyhydroxyalkyl, aryl or a residue of an amino acid or a sugar, or together form a heterocycle; R₂ represents hydrogen, alkyl having 1-15 carbon atoms, alkoxy having 1-4 carbon atoms or a cycloaliphatic radical; R₃ represents hydrogen, hydroxy, alkyl having 1-4 carbon atoms, alkoxy having 1-10 carbon atoms, a cycloaliphatic radical, a thiocycloaliphatic radical or —O—Si(CH₃)₂—R₈ wherein R₈ represents lower alkyl; and R₄ and R₅ represent hydrogen, lower alkyl, hydroxy or lower acyloxy.

This compound is useful in the topical and systemic treatment of dermatologic diseases and in the treatment of the degeneration of conjunctive tissues. The compound also possesses anti-tumor activity.

4 Claims, No Drawings